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L1	2	"chlorella zofingiensis"	US-PGPUB; USPAT	OR	ON	2005/01/03 18:47
S1	1390	chlorella	US-PGPUB; USPAT	OR	ON	2004/12/20 09:53
S4	4201	carotenoid	US-PGPUB; USPAT	OR	ON	2004/12/16 15:55
S5	551	astaxanthin	US-PGPUB; USPAT	OR	ON	2004/12/16 15:47
S6	77	S1 same S4	US-PGPUB; USPAT	OR	ON	2004/12/16 15:48
S7	6	S1 same S5	US-PGPUB; USPAT	OR	ON	2004/12/16 15:47
S8	9372	carotenoid xanthophyll lutein cryptoxanthin zeaxanthin astaxanthin lycopene carotene spirilloxanthin antheraxanthin neoxanthin violaxanthin fucoxanthin canthaxanthin citranxanthin phoenicoxanthin diatoxanthin alloxanthin fritschiellaxanthin ketoalloxanthin ketozeaxanthin didehydroastaxanthin papilloerythrinone pectenolone echinenone	US-PGPUB; USPAT	OR	ON	2004/12/16 16:03
S9	110	S1 same S8	US-PGPUB; USPAT	OR	ON	2004/12/16 16:43
S10	358	S8 same dark\$4	US-PGPUB; USPAT	OR	ON	2004/12/16 16:43
S11	30	S10 same alga\$	US-PGPUB; USPAT	OR	ON	2004/12/16 16:44



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Enhanced production of astaxanthin by the green microalga *Chlorella zofingiensis* in mixotrophic culture

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Abstract

Mixotrophic culture may be used as an efficient means for enhanced production of light-induced pigments in microalgae. The growth and pigments formation of the green microalga *Chlorella zofingiensis* cultivated at various glucose and nitrate concentrations in mixotrophic culture were investigated. High glucose and low nitrate concentrations favoured the production of astaxanthin in the algal culture. The highest yield of astaxanthin was 12.5 mg l^{-1} , which was obtained in the medium containing 30 g l^{-1} glucose and 0.55 g l^{-1} nitrate. The results indicated that supplementation of glucose and nitrate in the culture medium could be effectively manipulated to enhance astaxanthin production by *C. zofingiensis* in mixotrophic culture.

Author Keywords: *Chlorella zofingiensis*; Astaxanthin; Glucose; Nitrate; Mixotrophic culture

Article Outline

1. Introduction2. Materials and methods2.1. The alga and culture conditions2.2. Determination of glucose, cell dry weight concentration and specific growth rate